

MEMORANDUM

TO: Whites Point Quarry Environmental Assessment Joint Review Panel

DATE: August 3, 2006

SUBJECT: Comments on the Proponent's Environmental Impact Statement

Please find attached comments from Nova Scotia Environment and Labour on the EIS for the proposed Whites Point Quarry and Marine Terminal Project. Included are comments from both the Environmental and Natural Areas Management Division and the Environmental Monitoring and Compliance Division.

We trust these comments will assist the panel in its assessment of the project. The Department will be available to discuss any identified issues further during the public hearing process.

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Comments from the Environmental Monitoring and Compliance Division
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1. Chapter 6.1 discusses that a permit (approval) was issued by NSEL for a quarry of less than four hectares in size. However, what is not mentioned is that this approval is no longer valid. Chapter 6.5.5 then discusses the various permits and approvals required for the project. The only approval discussed as required by NSEL is a water extraction approval. However, the proponent will also be required to obtain an Industrial Approval pursuant to 13(f) of the Activities Designation Regulations. This Industrial Approval would also include the bulk solids handling loadout facility pursuant to 16(2)(h) of those regulations. In addition the proponent would be required to obtain an approval for either an on-site sewage disposal system or for a sewage treatment and disposal (outfall) facility.
2. Chapter 7.1 discusses investigation of alternate quarry sites in the Atlantic Provinces and Nova Scotia. What sites were investigated? Why were no sites in the Eastern United States such as New York and New Jersey included?
3. Chapter 7.3 discusses that there are 5 residences within 500 m of the active quarry area and 19 within 500 - 1000 m. NSEL Pit and Quarry guidelines specify a separation distance of 800 m from off-site structure or residence that can be reduced providing the owners issues a signed waiver. There is no discussion regarding the company's ability to obtain necessary waivers that would allow project approval by NSEL.
4. Chapter 7.7.1 discusses utilities and states that "electrical energy would be provided from upgraded services on Highway 217 to the quarry compound area." What is meant by "upgraded services on Highway 217? How much electrical energy is the project expecting to use on an annual basis? Is the present grid capable of providing this energy or will this main line on Highway 217 need to be increased in capacity? If upgrade is required what will be negative or positive effects on area residents? Who would be responsible for constructing and financing the upgrades?
5. Chapter 7.7.1 also discusses utilization of an on-site sewage disposal system. While it may be possible to design a suitable on-site system it may be more probable that a sewage treatment plant, designed to Atlantic Canada Standards and requiring a certified operator will be required.
6. Chapter 9.3.18 discusses groundwater from one borehole only. It states that "the existing baseline groundwater quality data from the quarry site meets existing drinking water guidelines for MACs and IMACs and on-site wells, for domestic use are expected to provide good quality drinking water." This seems to be more a statement of faith rather than fact since no baseline samples were taken from any of the existing domestic wells and compared to the single borehole water quality. Additional on-site and off-site baseline monitoring should be required prior to

commencement of operation in the event that an approval to operate is issued.

7. There are 19 developed residential properties in the vicinity of the proposed quarry (Table 6 Ref Doc Vol V-28). Sixteen of these appear to be owned by separate individuals or couples. Only one of those sixteen was included in the individual consultation report (Ref Doc Vol IV-22). In addition, of 57 interviews included in the Traditional Knowledge Report (Ref Doc Vol IV-23) it appears that only 2 are from the nearest community. This lack of input from the closest community seems to reflect a bias towards the proponent and may not accurately reflect reasons for opposition to the project.

Comments from the Environmental and Natural Areas Management Division

Water and Wastewater Branch - Surface Water

The Environmental Impact Statement (EIS) documents have been reviewed as requested by the Joint Review Panel. Comments are provided below for consideration and are from a surface water management perspective, focussing on freshwater.

1. A considerable amount of information has been provided to aid assessment of impacts from this proposed undertaking on watercourses and surface water resources found on site.
2. Addressing erosion and sedimentation issues and associated impacts to both fresh and marine waters, is appropriate and one key area of potential impact from this type of activity and land use.
3. The EIS guidelines appear to have been generally followed, but more clarity in certain areas might be beneficial to aid the overall assessment related to fresh surface water resources.
4. Surface water resources are generally regarded as Valued Ecosystem Components (VECs) in most Environmental Assessments. Although the rationale may be implicitly provided in this case, it probably would be beneficial to clarify the rationale for screening this resource out as a VEC for this project.
5. At least three watercourses have been identified on the project site; two of which are near the boundaries of the project to the north and south, and one which originates in a pond or wetland beyond the project boundaries to the east and draining to the coastal bog identified near the shoreline of the Bay of Fundy. All are identified as intermittent streams with low or no flow during the late summer period. The two watercourses at the north and south boundaries are proposed to be included in 30 meter "Environmental Protection Zones " or vegetated buffer areas to ensure their protection. It might be beneficial to extend the Environmental Protection Zones to include the area around the third watercourse which flows to the coastal bog as well. This would help ensure protection of the bog and allow the existing watercourse to be maintained as habitat for aquatic life.
6. The current approval from NSDEL to Nova Stone Exporters Inc. for the quarry (Volume IV, Appendix 33) requires the proponent to maintain separation distances of 30 meters from the active area of the quarry to any watercourse. It is unclear exactly what is proposed in the EIS related to development of the quarry and the watercourse that drains to the coastal bog.
7. If avoidance of all watercourses are not possible, and planned diversions of watercourses (as mentioned in section 9.1.6.3) are necessary for a viable project,

then approvals for watercourse alterations or diversions would likely be required.

8. A sound rationale should be provided for diverting the watercourse(s) feeding the coastal bog and creating a sedimentation pond in that location, in year 5 or 6 of operation, if that is proposed. Maps Plan OP-1 and Plan OP-2 seem to indicate this. Otherwise, avoidance and protection of the watercourse would be appropriate.
9. It is stated in the EIS that water supply to meet process water needs will be provided from surface water runoff taken from the sedimentation ponds. It is also mentioned that this water supply would be in deficit during August and September in quantities of 8,000 m³ to 12,000m³, from years 5 through 40 of operation (Chapter 7, section 7.8, page 47, paragraph 2). Additional water supply needed to cover this deficit for process requirements should be identified.
10. Mitigation measures proposed for reducing the migration of silt off site could include a number of measures proposed in the Erosion and Sedimentation Control Handbook for Construction Sites. This should be used as a guide and referenced.
11. Proposed water quality and quantity monitoring programs relate to effluent discharge from the sedimentation ponds only. It would be beneficial additionally for all watercourses on site to be part of the effects monitoring program to confirm impact prediction and to assess whether mitigation is effective. The baseline water quality and quantity monitoring program at upstream and downstream locations of areas of influence from the quarry would serve well as follow up effects monitoring post-development. This would be in the proponent's interest particularly where the southern watercourse originates outside the project area, and as recognized in the report, is "subject to the prevailing activities" in the watershed upstream of the proponent's property.
12. Characterization of water quality in freshwater monitoring programs typically involves analysing nutrients such as phosphorus and nitrogen to the lowest detection limits available. This allows better characterization, comparisons over time and space, and avoids water quality reporting of non-detectable concentrations as seen in Volume IV, Appendix 45. Although nutrients are unlikely to be an issue with this project, it would be beneficial to include low level nutrient analysis to any subsequent freshwater monitoring programs for receiving waters.
13. The Little River has been identified as a larger more significant watercourse outside of the project area. Proposed mitigation measures related to drainage from a small piece of it's watershed lying in the project area should ensure protection of that resource.

Water and Wastewater Branch - Groundwater

Based on review of the Environmental Impact Statement (EIS), dated 31 March 2006, comments below focus on groundwater resources and water wells.

1. The EIS is well organized, well written and well presented. I agree with the statement made in the report which indicates that the main potential impacts from the proposed quarry include the temporary siltation of nearby wells due to blasting and possible reduced water levels in wells (refer to page 9, Volume V, Tab 28). However, further information is required to evaluate the extent and magnitude of potential effects of the proposed quarry on groundwater. Specifically, clarification is needed on the proposed depth of the quarry and a quantitative assessment is needed to assess the potential drawdown effects at off-site water wells if the quarry extends below the water table. These issues are discussed in further detail below.
2. The proposed depth of the quarry, relative to the elevation of the water table, is one of the most critical parameters needed to evaluate the potential effects of the quarry on groundwater. The deeper the quarry extends below the water table, the greater the potential for groundwater levels to be lowered on-site and adjacent to the site.

Clarification is needed on the proposed depth of the quarry. On page 16 of the Plain Language Summary, it is stated that "Quarrying will be carried out above the normal water table." However, information provided in several other sections of the EIS indicates that the quarry may extend up to 20 m below the water table. For example, on page 10 of Volume V, Tab 28 it is stated that the "...quarry face could cut 20 m below the inferred existing water table..." Furthermore, comparison of the quarry and water table cross-sections in Figures 6A and 7 in the Plain Language Summary also indicates that the quarry will extend below the water table, by up to approximately 20 m. In addition, on page 3 of Volume V, Tab 28, the water table elevation at borehole NS-02-01 was reported to be 35.9 m, above sea level (asl). If the quarry floor will be at approximately 15 m, asl, as reported on page 1, Volume V, Tab 28 and depicted in Figure 5 in Chapter 7, Volume V, then the quarry floor will extend below the water table by approximately 20 m at this location (i.e., $35.9 \text{ m} - 15 \text{ m} = 19.9 \text{ m}$).

Data should be provided on the proposed quarry floor elevation versus the water table elevation at the site. If the quarry floor will extend below the water table, quantitative estimates of the resulting off-site drawdown at the nearest water wells should be provided. Quantitative estimates can be made using the analytical model, which was requested in the EIS Guidelines (March 2005) for the project, as long as appropriately conservative input parameters are used in the model. More realistic quantitative estimates could be obtained using a numerical model. The EIS report suggests on page 14, Volume V, Tab 29, that a model was not constructed for the site because "...groundwater models can have serious limitations in crystalline bedrock." It should be noted that properly constructed and calibrated groundwater

models can be very useful and are commonly used by hydrogeologists for assessing groundwater flow in bedrock, including quarry and mine sites, in Nova Scotia and worldwide. The documentation and assessment of model limitations and uncertainty is a standard part of a groundwater modelling exercise.

3. With respect to blasting, it is stated on page 16 of the Plain Language Summary that “Studies by the U.S. Bureau of Mines, the Montana Bureau of Mines and Geology among others have shown that blasting does not affect groundwater quality or quantity in comparable mines.” As suggested on page 10 of Volume V, Tab 28, a critical factor controlling whether or not blasting has potential to affect a water well is the distance between the blast site and the water well. How close were the water wells to the blasting sites in these studies? Complete references for these studies should be provided so they can be reviewed. The above referenced comment from the Plain Language Summary differs somewhat from statements made in Volume V, Tab 28, which indicate that blasting impact is considered the most likely source of complaint from the proposed quarry and that the sensitivity of individual wells to blasting should be addressed through a residential well survey and reducing the size of individual blasts. This discrepancy should be clarified.
4. On page 16 of the Plain Language Summary, it is indicated that the quality and quantity of local groundwater supplies will not be affected because quarrying will take place in the upper basalt flow, which is not the same geologic unit that the neighbouring wells are located in. Note that this may not be true if there is sufficient hydraulic communication between the upper basalt flow and the other geologic units. Is there any hydraulic testing data available from the site to confirm that there is no hydraulic connection? A pumping test would normally be used by hydrogeologists to determine whether or not a hydraulic connection exists.
5. On page 16 of the Plain Language Summary, it is indicated that the quality and quantity of local groundwater supplies will not be affected by the quarry because the neighbouring wells are located on the opposite side of the groundwater divide. Although, this statement is reasonable for contaminant migration, it is not necessarily true for groundwater quantity. The potential effects on groundwater flow and groundwater quantity is more realistically described on page 10 of Volume 5, Tab 28, where it is indicated that the quarry would cause the groundwater divide to shift to the southeast and gradual lowering of the water levels in the bedrock south of the quarry face, and possibly in the vicinity of Highway 217. It is further indicated in this section of the EIS that the degree of impact will depend on individual well yields, distance from the drainage face, well depth and time of year.
6. On page 13 of Volume V, Tab 29, it is indicated that a six well, multi-level monitoring program was completed at the site. However, the drill reports in the EIS for the 4 boreholes and 6 monitoring wells that were installed at the site indicate that none of these were completed as multi-level monitoring wells. This discrepancy should be clarified. Note that hydrogeologists typically define multi-level wells to be 2 or

more wells installed at the same location (i.e., within a few metres of each other or within the same borehole), with screened intervals at different depths.

7. I cannot find a conceptual model and analytical model of the hydrological cycle of the site, as required under “Section 9.1.3.2 Groundwater” of the EIS Guidelines (March 2005). Please clarify where these models can be found in the EIS.
8. In several sections of the EIS there are indirect references made to documents in support of the EIS conclusions; however, complete references have not been provided. Examples of these incompletely referenced documents include:
 - “...a classic groundwater report....” (See page 7, Volume V, Tab 29);
 - “...studies have shown that water wells have a life expectancy of less than 20 years...” (See page 14, Volume V, Tab 29); and
 - “...studies by the U.S. Bureau of Mines, the Montana Bureau of Mines and Geology among others...” (See page 16, Plain Language Summary).

Complete references should be provided for all documents, studies and reports referred to in the EIS so that reviewers can have the opportunity to locate and review these.

Air Quality Branch

The Air Quality Branch has reviewed the Environmental Impact Statement (EIS) for the Whites Point Quarry and Marine Terminal project in Digby County. We are satisfied that the mitigation measures proposed in the EIS for air quality issues are adequate.

Pollution Prevention Branch

The areas of responsibility and interest of the Pollution Prevention Branch include the following:

contaminated sites	pesticides
hazardous substances	pollution prevention.
environmental emergencies	

1. Overall the proponent's plan appears to have anticipated and designed adequate mitigative measures to address most potential concerns related to areas within the P2 mandate.
2. Satisfactory commitments are made on page 40 of Chapter 7, to construct the maintenance shop and fuelling area on reinforced concrete slabs designed to contain spillage. Satisfactory commitments to maintenance shop fuel storage plans are provided on page 44. However, details are needed on the system proposed to remove any petroleum or other contaminants from water from the 'fuel pad reservoir' mentioned on page 40.
3. The proponent should provide more details on procedures for refuelling mobile equipment including where equipment will be sited during refuelling (eg on pads or other impermeable surfaces), emergency spill procedures, spill containment and cleanup equipment to be kept on site.
4. The proponent should state where the emergency generator (described on page 44 as part of the stationary equipment) will be sited. The proponent should identify whether it will have a dedicated fuel storage tank associated with it. If so, plans should be provided on how the proponent will contain potential spillage from this tank.
5. The proponent should provide more information on what flocculents and/or other additives will be used for water treatment, how they will be stored, and on potential impacts and mitigative measures (if potential impacts are identified) for spills of flocculents or additives. Also more information is needed on whether there will be any contaminants (eg from specific flocculents) present in the flocculated sediment to be used for site reclamation which could leach out or inhibit vegetation growth and if so, how will this issue be addressed.
6. More information is needed on the dykes mentioned on page 47 of Chapter 7, which are proposed to contain sediment stockpile areas. The proponent should identify whether these areas are expected to contain water. If so, mitigative measures should be identified to ensure they do not fail or overflow during periods of unusually heavy precipitation.
7. There is no information provided on ship refuelling or storage of fuel for ships at the site. It should be made a condition of the release from the EA that no ship fuel will be stored or dispensed on the site.